

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau(43) International Publication Date
22 January 2004 (22.01.2004)

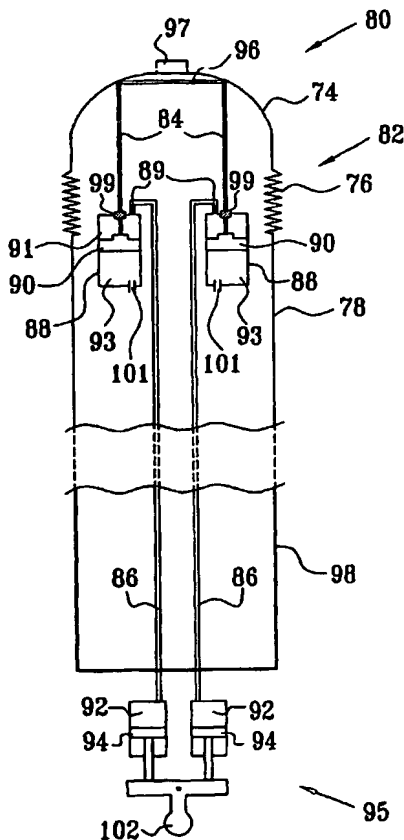
PCT

(10) International Publication Number
WO 2004/006980 A2

- (51) International Patent Classification⁷: A61M
- (21) International Application Number: PCT/IL2003/000564
- (22) International Filing Date: 8 July 2003 (08.07.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/395,694 11 July 2002 (11.07.2002) US
- (71) Applicant (for all designated States except US): SIGHT-LINE TECHNOLOGIES LTD. [IL/IL]; Advanced Technology Center, Matam, 31905 Haifa (IL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): RAZ, Dan [IL/IL];
- 62 Habikurim Street, 34577 Haifa (IL). NIR, Reuven [IL/IL]; 19100 Kibutz Merhavvia (IL). BAROR, Yakov [IL/IL]; 10 Tidhar Street, Vardia, 34655 Haifa (IL).
- (74) Agents: SANFORD T. COLB & CO. et al.; P.O. Box 2273, 76122 Rehovot (IL).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,

[Continued on next page]

(54) Title: PISTON-ACTUATED ENDOSCOPIC STEERING SYSTEM



(57) Abstract: Endoscopic steering apparatus is provided, including an endoscope (80) having distal (82) and proximal (98) ends thereof. In a preferred embodiment, at least one proximal cylinder (92) is disposed in a vicinity of the proximal end of the endoscope, and at least one proximal piston (94) is slidably coupled to the at least one proximal cylinder. This piston is typically manually driven. A first distal cylinder (88) is disposed at the distal end of the endoscope, and a first distal piston (90) is slidably coupled to the first distal cylinder. A second distal cylinder (88) is disposed at the distal end of the endoscope, and a second distal piston (90) is slidably coupled to the second distal cylinder. A first tube (86) is coupled to the first distal cylinder and to the at least one proximal cylinder, and a second tube (86) is coupled to the second distal cylinder and to the at least one proximal cylinder. A linkage (96) is disposed at the distal end of the endoscope and coupled to the first distal piston and to the second distal piston, such that displacement of at least one of the distal pistons causes displacement of the linkage and steering of the distal end of the endoscope.